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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SIEW, JEFFREY

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 04/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,370

Applicant(s)

UHLMANN ET AL.

Examiner

Jeffrey Siew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-85 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 and 24-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 & 20-23 & 31-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Location of Application

1. The location of the subject application has changed. The subject application is now located in Group 1630, Art Unit 1637, and is assigned to Patent Examiner Jeffrey Siew.

Information Disclosure Statement

2. The I.D.S. filed 10/26/02 paper no. 4 and 1/22/02 paper no. 5 are not located in the file wrapper. It is respectfully requested that courtesy copies be submitted.

Drawings

3. The drawings filed 4/17/01 do not appear in the file wrapper. It is respectfully requested that courtesy copies be submitted.

Election/Restrictions

4. Applicant's election with traverse of Group I in Paper No. 10 is acknowledged. The traversal is on the ground(s) that all the claims 1-85 are sufficiently related that the search one one group would encompass the subject matter for the remaining claims and no serious burden exists. This is not found persuasive because Group I product may be synthesized by a plurality of different methods such as using the chiral centers of each PNA derivative and forcing

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precipitation of a specific diastereoisomers by altering the solvent conditions without the method of group III. Moreover the product may be used in a plurality of different methods including hybridization and sequencing methods. The scope of search do not encompass the full subject matter of the other claims and would entail serious burden.

The requirement is still deemed proper and is therefore made FINAL.

Claims 16-19 & 24-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 , 20,21 & 31-85 are rejected under 35 U.S.C. 102(b) as being anticipated by Uhlmann et al (Nucleosides & Nucleotides vol. 16(5&6) pp. 603-608 1997).

Uhlmann et al teach polyamide nucleic acids that bind to complementary DNA and RNA with N-(2-aminoethyl)glycine units (see whole document esp. page 603, 604 & 607 structures). They teach PNAs as antisense therapeutics and DNA diagnostics (see page 604). They teach synthesis from derivatives off solid support.(see page 604).

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The claims in the broadest reasonable interpretation wherein u' is zero and n is zero and z' is zero and {poly} is Formula IIIA.

6. Claims 1-12, 21,31-85 are rejected under 35 U.S.C. 102(b) as being anticipated by Breipohl et al (US6,046,306 April 4,2000).

Breipohl et al teach polyamide nucleic acids. They teach various labels that may be associated with PNA such biotin, fluorescein (see col. 5 lines 1-10).

The claims in the broadest reasonable interpretation wherein u' is zero and n is zero and z' is zero and {poly} is Formula IIIA.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22 & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uhlmann et al (Nucleosides & Nucleotides vol. 16(5&6) pp. 603-608 1997) in view of Weiler et al (NAR vol. 15 no. 14 pp. 2792-2799 1997).

The teachings of Uhlmann et al are described previously.

Uhlmann et al do not teach microarray supports.

Weiler et al teach the construction of PNA oligomer arrays for hybridization assays (see whole doc. esp. abstract).

One of ordinary skill in the art would have been motivated to apply Weiler et al's teaching of microarrays to Uhlmann et al's PNA in order to construct oligonucleotide sensors. As Weiler et al states the PNA may be used in arrays because the PNA provide high thermal stability and are instrumental for screening sequences (see page 2792-3). It would have been prima facie obvious to apply Weiler et al's teachings of microarrays to Uhlmann et al's PNAs in order to increase hybridization specificity and affinity in microarray screening.

8. Claims 22 & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breipohl et al (US6,046,306 April 4,2000) in view of Weiler et al (NAR vol. 15 no. 14 pp. 2792-2799 1997).

The teachings of Breipohl et al are described previously.

Breipohl et al do not teach microarray.

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Weiler et al teach the construction of PNA oligomer arrays for hybridization assays (see whole doc. esp. abstract).

One of ordinary skill in the art would have been motivated to apply Weiler et al's teaching of microarrays to Uhlmann et al's PNA in order to construct oligonucleotide sensors. As Weiler et al states that the PNA may be used in arrays because the PNA provide high thermal stability and are instrumental for screening sequences (see page 2792-3). It would have been prima facie obvious to apply Weiler et al's teachings of microarrays to Uhlmann et al's PNAs in order to increase hybridization specificity and affinity in microarray screening.

9. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uhlmann et al (Nucleosides & Nucleotides vol. 16(5&6) pp. 603-608 1997) in view of Manoharan et al (US6,043,352 March 28, 2000).

The teachings of Uhlmann et al are described previously.

Uhlmann et al do not teach binding to HA ras translation start or pharmaceutical composition.

Manoharan et al teach oligonucleotides used in pharmaceutical compositions with pharmaceutically acceptable diluent or carrier for diagnostics or therapeutics (see whole doc. esp. abstract and col. 8 line 45-50). Moreover they teach targeting Ha ras initiation translation region (see col. 16 lines 31-35). They also teach the use of PNAs (see col.3 lines 1-5). They teach modification with labels such as fluorescein and biotin(see col. 3lines 5-7).

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One of ordinary skill in the art would have been motivated to apply Manoharan et al's teaching of binding to antisense inhibition with Uhlmann et al's PNAs in order inhibiting gene expression. As Manoharan et al teach that the oligonucleotides bind to target DNA or RNA for therapeutic antisense inhibition, which interfere with protein production ,increase maximum therapeutic effect and minimal side effects (see col. 1 lines 14-26). It would have been prima facie obvious to apply Manoharan et al's teaching of antisense inhibition to Uhlmann et al's PNA's which provide increase hybridization efficiency in order to increase the inhibition efficiency of oligonucleotides to target DNA

SUMMARY

10. No claims allowed. The broad genus is taught by the prior art. However, the elected species (see response filed 2/19/03) is free of the prior art.

CONCLUSION

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119.

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Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Tracey Johnson for Art Unit 1637 whose telephone number is (703)-305-2982.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Before Final FAX (703) 872-9306 or After Final FAX (703) 30872-9307.


JEFFREY SIEW
PRIMARY EXAMINER

April 14, 2003